



Evaluation of Acute Lower Respiratory Tract Infection

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KEYWORDS

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ABSTRACT:

ARI in young children was estimated to cause 1.9 million fatalities per year worldwide, according to research. Researchers estimated that Bangladesh, India, Indonesia, and Nepal account for 40% of worldwide ARI mortality. Thus, our study evaluated ALRT's CF, RF, and o. A thorough history was taken, including symptoms like fever, cough, RB, CR, ROF, lethargy, wheezing, PMH, HOI, HOB, h/o URT, h/o SBFM, details of CFAH, SES, RR, HR, pallor, vitamin deficiency, systemic examination, standard blood investigation, and chest X-ray. In our study, we found that there was an association between PI, MI, IS, and ALRIS. Whereas, there was no statistically significant association between ALRIS & TLC and BC & ALRIS. Thus, it was concluded that TLC and positive BC were observed in a minority of cases. However, there was no significant correlation found between BC results and the S of ALRI.

INTRODUCTION

Various past studies have concluded that acute Lower Respiratory Tract Infection (ALRI) was a "significant contributor to morbidity and mortality in children under the age of 60 months worldwide".¹ Studies have also shown that annually, there was approximately 1.56 billion new cases globally and in India it is around 0.43 billion cases.¹ Researcher through their studies have also concluded that, 7% to 13%, children diagnosed with ALRI, exhibit severe symptoms that necessitate hospitalization.² Studies have also shown that there were certain risk factors which include non exclusive breast feeding, lack of age appropriate immunisation, malnutrition, crowding, low birthweight, indoor air pollution.^{1,3} Hence, in our study we have decided to evaluate & assess ALRT.

AIM

To evaluate & assess the clinical profile (CF), risk factors (RF) and outcome (o) of ALRT.

INCLUSION CRITERIA

1. Children with 2 to 60 month

2. Both genders babies were included.

EXCLUSION CRITERIA

Any known chronic cardiac or respiratory illness.

MATERIAL & METHOD

We have conducted a prospective observational type of study with a total of 130 patients in the pediatric ward KIMS, Karad, starting from November 2017 and ending on February 28, 2019. A detailed history including symptoms like fever, cough, rapid breathing (RB), chest retraction (CR), refusal of feeds (ROF), lethargy, wheezing, PMH, HOI, history of breastfeeding, history of the upper respiratory tract (URT), history of smoking by family members, details of cooking fuel used at home, SES, respiratory rate (RR), heart rate (HR), pallor and vitamin deficiency, systemic examination, routine blood investigation, and chest x-ray were recorded.

STATISTICAL ANALYSIS

A chi-square test was used to do all the analysis. When the P value was 0.05, it was considered significant.



RESULT

		CD			Total
		P	SP	VSP	
Age Months	2 - 12 M	13	42	23	78
	13 - 60 M	8	37	7	52
Total		21	79	30	130

$X^2 = 5.04$, $p = 0.08$

Table 1: Age and clinical diagnosis (CD)

In our study we have found that , there was no significant association found between ALRI severity(S) and age.

		CD			Total
		P	SP	VSP	
SEX	F	8	40	8	56
	M	13	39	22	74
Total		21	79	30	130

$X^2 = 5.35$, $p = 0.07$

Table 2: Gender and CD

In our study, we found that the maximum number of patients were males, with 74 out of 130, and the remaining were females, with 56 out of 130, respectively. Hence, no statistically significant association was found between the two variables.

Symptoms	Frequencies	Percentages
Fever	120	92.31%
Cough	130	100.00%
BRLS	126	96.92%
WZ	15	11.54%
VT/DR	14	10.77%
CNVLS	2	1.54%
Chest Ind	106	81.54%
Ref Feeds	29	22.31%
RNG NS	90	69.23%

Table 3: Complaints

In our study we found that, majority of the patients were suffering from BRLS with 126 (96.92%) and least with CNVLS i.e. only 2 with 1.54% respectively.



		CD			Total
		P	SP	VSP	
ML	G	2	0	0	2
	H/S	8	10	4	22
	ILL	2	12	11	25
	P/M	9	57	15	81
Total		21	79	30	130
X ² = 26.69 , p < 0.001					

Table 4 : Maternal literacy(ML) & CD

In our study we have found that, majority of the mothers were educated till primary or middle school. Thus, association was statistically significant between ALRIS & ML.

		CLIN DIAG			Total
		P	SP	VSP	
PL	G	3	1	3	7
	H/S	13	18	6	37
	ILL	1	9	7	17
	P/M	4	51	14	69
Total		21	79	30	130
X ² = 27.14 , p < 0.001					

Table 5: Paternal Literacy (PL) and CD

In our study we found that, majority of the fathers were educated till primary or middle school. Thus association showed significant difference.

		CD			Total
		P	SP	VSP	
IMMUN	AFA	20	34	12	66
	IFA	1	45	18	64
Total		21	79	30	130
X ² = 19.89 , p < 0.001					

Table 6: Immunisation (IM) & CD

In our study we have found that, there was a statistically significant association present between IS & ALRIS.

Overcrowding	CD			Total
	P	SP	VSP	



ORCD	No	11	30	3	44
	Yes	10	49	27	86
Total		21	79	30	130
$X^2 = 11.44, p = 0.003$					

Table 7: Overcrowding (OC) & CD

In our study we have found that, there was significant association present between ALRIS & OC.

		CD			Total
		P	SP	VSP	
SES	II	9	3	2	14
	III	6	32	12	50
	IV	6	43	15	64
	V	0	1	1	2
Total		21	79	30	130
$X^2 = 27.99, p < 0.001$					

Table 8: SES & CD

In our study we have found that, there was a statistically significant association present between SES & ALRIS.

		Weaning			Total
		<4 months	4-6months	>6months	
CLIN DIAG	P	5	4	12	21
	SP	21	19	39	79
	VSP	14	5	11	30
Total		40	28	62	130
$X^2 = 5.07, p = 0.28$					

Table 9: Weaning (WS) & CD

In our study we have found that, there was no statistically significant association between WS & ALRIS.

		CD			Total
		P	SP	VSP	
Anaemia	-	19	42	14	75
	+	2	37	16	55
Total		21	79	30	130
$X^2 = 11.40, p = 0.003$					

Table 10: Anaemia(A) & CD



In our study we have found that, there was stastically significant association between A & ALRIS.

		CD			Total
		P	SP	VSP	
PEM	Not Known	16	39	18	73
	I	3	14	0	17
	II	2	13	1	16
	III	0	12	10	22
	IV	0	1	1	2
Total		21	79	30	130
$X^2 = 20.14, p = 0.01$					

Table 11: Malnutrition (MN) & CD

In our study we have found that, there was a statistically significant association between NS & ALRIS.

		BW		Total
		<2.5 Kg	>2.5 Kg	
CLIN DIAG	P	4	17	21
	SP	39	40	79
	VSP	16	14	30
Total		53	77	130
$X^2 = 7.15, p = 0.028$				

Table 12: Birth weight (BW) & CD

In our study we have found that, there was a statistically significant association between BW & ALRIS.

		CD			Total
		P	SP	VSP	
FLOOR	CWDNG	0	2	0	2
	MUD	3	11	10	24
	PUCCA	18	66	20	104
Total		21	79	30	130
$X^2 = 6.84, p = 0.15$					

Table 13: Type of floor (TOF) & CD



In our study we have found that, there was no statistically significant association between TOF& ALRIS.

		CD			Total
		P	SP	VSP	
VNT	ADQ	16	47	14	77
	INDQ	5	32	16	53
Total		21	79	30	130
X ² = 4.47 , p = 0.11					

Table 14: Cross Ventilation(CV)&CD

In our study we found that,there was no statistical significant association between CV& ALRIS.

		CD			Total
		P	SP	VSP	
	GAS	17	26	10	53
	OTHERS	4	53	20	77
Total		21	79	30	130
X ² = 19.01 , p = 0.001					

Table 15: Cooking Fuel(CF) & CD

In our study we have found that, there was statistically significant association ALRIS & CF.

		CD			Total
		P	SP	VSP	
KTCHN	ATT	9	63	19	91
	SEP	12	16	11	39
Total		21	79	30	130
X ² = 11.58 , p = 0.003					

Table 16: Kitchen(K) & CD

In our study we have found that, there was statistically significant association between K & ALRIS.

		CD			Total
		P	SP	VSP	
SM	-	16	65	21	102
	+	5	14	9	28
Total		21	79	30	130
X ² = 2.011 , p = 0.37					

Table 17: Smoking in family(SIF)&CD



In our study we have found that, there was no statistically significant association between SIF & ALRIS.

		H/O URI		Total
		No	Yes	
CLIN DIAG	P	13	8	21
	SP	52	27	79
	VSP	17	13	30
Total		82	48	130
X ² = 0.79, p = 0.67				

Table 18: Family h/o of URTI

In our study we have found that, there was no statistically significant association between ALRIS & family h/o URTI.

		Leucocytosis		Total
		No	Yes	
CLIN DIAG	P	11	10	21
	SP	41	38	79
	VSP	13	17	30
Total		65	65	130
X ² = 0.69, p = 0.71				

Table 19: TLC

In our study we have found that, there was no statistically significant association between ALRIS & TLC.

		C D			Total
		P	SP	VSP	
BC	-	21	78	26	125
	S. AUR	0	1	3	4
	STREP.	0	0	1	1
Total		21	79	30	130
X ² = 11.36 , p = 0.08					

Table 20: BC&CD

In our study we have found that, there was no statistically significant association between BC& ALRIS.

		CD			Total
		P	SP	VSP	
OX SUP	-	16	0	0	16
	+	5	79	30	114



Total	21	79	30	130
$X^2 = 81.74, p < 0.001$				

Table 21: Oxygen supplementation(OS)&CD

In our study we have found that, out of 130 patients 114 required OS and no statistically significant association between the 2 variables.

		CD			Total
		P	SP	VSP	
VENT	-	21	76	23	120
	+	0	3	7	10
Total		21	79	30	130
$X^2 = 13.77, p = 0.001$					

Table 22: Ventilatory support(VS) &CD

In our study we have found that, there was statistically significant association between VS & ALRIS.

		CD			Total
		P	SP	VSP	
OTCM	EXP	0	0	2	2
	IMP	21	79	28	128
Total		21	79	30	130
$X^2 = 6.77, p = 0.034$					

Table 23: Outcome (O) & CD

		CD			Total
		P	SP	VSP	
FINAL DIAGNOSIS	ALTB	0	4	1	5
	BRCHPN	5	16	6	27
	BRNCHIO	11	41	11	63
	LOBPNE	2	11	12	25
	ET	0	1	0	1
	WLRI	3	6	0	9
Total		21	79	30	130
$X^2 = 29.99, p = 0.07$					

Table 24: CD&FD



DISCUSSION

We found that , ALRI was a significant contributor to both mortality and morbidity in children under 60 months of age, particularly in developing nations. The majority of cases of ALRI in our study were observed in infants, accounting for 60% of the cases. This finding aligns with previous studies conducted by Divyanarayani et al,⁴ Kumar AMK et al.,⁵ where infants with ALRI comprised 61%, 61%, and 63.5% of the cases, respectively. Our study showed 56.9% males among the cases studied. Male children were observed to be the majority among various studies on children younger than 60 months with ALRI. Male children constituted 58% of the total in the studies by Kumar AMK et al.⁵ Parental literacy may extend a protective effect on children and thus protect against ALRI by increasing awareness about preventive practices and early medical consultation another study showed similar results.⁶ Furthermore, similar results were also seen in study done by Divyanarayani et al⁴ which showed 50% and 53% partially immunized children, respectively, thus, significant association was found between ALRIS and IS. In our study we also found that ,majority of the patients were admitted with cough, breathlessness, and fever as their main complaints (100%, 96.9%, and 92.3%, respectively). The other common complaints were chest pain in 81.5% and runny nose in 69.2% of patients. Refusal to feed was found in 22.3% of cases. Wheeze was present in 11.5% of cases, and diarrhea and vomiting were found in 10.7% of cases. 1.5% of cases had convulsions. For FD, 48.4% were diagnosed as bronchilolitis, 20.7% as bronchopneumonia, 19.2% as lobar pneumonia, 6.9% as WLRI (wheeze-associated lower respiratory infection), 3.8% as acute laryngotracheobronchitis (croup), and 0.7% as empyemathoracis. Blood cultures were positive in only 3.8% of cases; however, no significant association was found between blood culture and ALRIS.

CONCLUSION

It is evident from our analysis that the clinical variables examined consistently exhibited signs and symptoms of ALRI in nearly all cases, as outlined by the World Health Organization's ARI Control Program. In relation to the laboratory profile, it was noted that TLC and positive BC were observed in a minority of cases. However, there was no significant correlation found between BC results and the severity of ALRI.

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